United Nations A/AC.105/786

General Assembly

Distr.: General
15 March 2002

Original: English

Committee on the Peaceful Uses of Outer Space
Forty-fifth session
Vienna, 5-14 June 2002

Report of the Scientific and Technical Subcommittee on its thirty-ninth session, held in Vienna from 25 February to 8 March 2002

Contents

Chapter		Paragraphs	Page
I.	Introduction	1-22	3
	A. Attendance	3-7	3
	B. Adoption of the agenda	8	3
	C. Documentation	9	4
	D. General statements	10-14	4
	E. National reports	15-16	4
	F. Symposiums	17-21	4
	G. Adoption of the report of the Scientific and Technical Subcommittee	22	5
II.	United Nations Programme on Space Applications	23-48	5
	A. Activities of the United Nations Programme on Space Applications	28-40	6
	B. International space information service	41-42	9
	C. Regional and interregional cooperation	43-48	10
III.	Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)	49-55	10
IV.	Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment	56-64	11

V.02-52565 (E) 030402 040402

V. Use of nuclear power sources in outer space 65-77 12

VI. Means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system 78-90 13

VII. Implementation of an integrated, space-based global natural disaster management system 91-111 15

A. Existing and proposed satellite and data distribution systems that can be used operationally for disaster management..... 95-104 15

B. Gaps in satellite and data distribution systems..... 105-111 17

VIII. Space debris..... 112-126 17

IX. Examination of the physical nature and technical attributes of the geostationary orbit and of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries..... 127-134 19

X. International cooperation in limiting obtrusive space advertising that could interfere with astronomical observations..... 135-142 20

XI. Mobilization of financial resources to develop capacity in space science and technology applications 143-147 21

XII. Draft provisional agenda for the fortieth session of the Scientific and Technical Subcommittee 148-152 21

Annexes

I. Documents before the Scientific and Technical Subcommittee at its thirty-ninth session 23

II. Report of the Working Group of the Whole 27

III. Report of the Working Group on the Use of Nuclear Power Sources in Outer Space..... 39

I. Introduction

1. The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space held its thirty-ninth session at the United Nations Office at Vienna from 25 February to 8 March 2002 under the chairmanship of Karl Doetsch (Canada).

2. The Subcommittee held 19 meetings.

A. Attendance

3. Representatives of the following member States of the Committee attended the session: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Cuba, Czech Republic, Ecuador, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Kenya, Lebanon, Malaysia, Mexico, Morocco, Netherlands, Nigeria, Pakistan, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Slovakia, South Africa, Spain, Sweden, Syrian Arab Republic, Turkey, United Kingdom of Great Britain and Northern Ireland, United States of America and Venezuela.

4. At the 561st meeting, on 25 February 2002, the Chairman informed the Subcommittee that requests had been received from Algeria, Finland, the Libyan Arab Jamahiriya, Switzerland and Thailand to attend the session. Following past practice, those States were invited to send delegations to attend the current session of the Subcommittee and to address it as appropriate, without prejudice to further requests of that nature; that action did not involve any decision of the Subcommittee concerning status but was a courtesy that the Subcommittee extended to those delegations.

5. The following specialized agencies and other organizations in the United Nations system were represented at the session by observers: United Nations Educational, Scientific and Cultural Organization (UNESCO) and International Atomic Energy Agency (IAEA).

6. The session was also attended by the observers for the European Commission, the European Space Agency (ESA), the Committee on Space Research (COSPAR), the European Association for the International Space Year (EURISY), the International Astronautical Federation (IAF), the International Astronomical Union (IAU), the International Society for Photogrammetry and Remote Sensing (ISPRS), the International Space University (ISU), the National Space Society (NSS) and the Space Generation Advisory Council (SGAC).

7. A list of the representatives of States, United Nations entities and other international organizations attending the session is contained in document A/AC.105/C.1/INF/31.

B. Adoption of the agenda

8. At its 561st meeting, on 25 February 2002, the Subcommittee adopted the following agenda:

1. Adoption of the agenda.
2. Statement by the Chairman.
3. General exchange of views and introduction to reports submitted on national activities.
4. United Nations Programme on Space Applications.
5. Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III).
6. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
7. Use of nuclear power sources in outer space.
8. Means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system.
9. Implementation of an integrated, space-based global natural disaster management system.
10. Space debris.
11. Examination of the physical nature and technical attributes of the geostationary orbit and of its utilization and applications, including, inter alia, in the field of space

communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries.

12. International cooperation in limiting obtrusive space advertising that could interfere with astronomical observations.

13. Mobilization of financial resources to develop capacity in space science and technology applications.

14. Draft provisional agenda for the fortieth session of the Scientific and Technical Subcommittee.

15. Report to the Committee on the Peaceful Uses of Outer Space.

C. Documentation

9. A list of the documents that were before the Subcommittee is provided in annex I to the present report.

D. General statements

10. Statements were made by representatives of the following member States during the general exchange of views: Argentina, Australia, Austria, Brazil, Canada, Chile, China, Colombia, Cuba, France, Germany, Hungary, India, Indonesia, Iran (Islamic Republic of), Iraq, Italy, Japan, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Peru, Portugal, Republic of Korea, Romania, Russian Federation, Saudi Arabia, Slovakia, South Africa, Turkey, United Kingdom and United States. The representative of Venezuela also made a statement on behalf of the Group of Latin American and Caribbean States. Statements were also made by the observers for UNESCO, COSPAR, EURISY, IAF, IAU, ISPRS, ISU and NSS. The delegates of Algeria and the Libyan Arab Jamahiriya also made general statements.

11. The representative of Slovakia made a technical presentation entitled "Space research in Slovakia". There was also a briefing by the American Institute of Aeronautics and Astronautics (AIAA), IAF and the Office for Outer Space Affairs of the Secretariat on the World Space Congress, to be held in Houston, Texas, United States, from 10 to 19 October 2002.

12. At the 561st meeting, on 25 February 2002, the Chairman made a statement outlining the work of the Subcommittee at its current session and reviewing space activities over the past year, including important advances that had been achieved as a result of international cooperation.

13. Also at the 561st meeting, the Director of the Office for Outer Space Affairs made a statement reviewing the work programme of the Office.

14. The Subcommittee noted with appreciation that the Governments of France and the Republic of Korea had provided associate experts to assist the Office for Outer Space Affairs in carrying out its work relating to implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III).

E. National reports

15. The Subcommittee took note with appreciation of the reports submitted by Member States (A/AC.105/778) and considered by the Subcommittee under agenda item 3, entitled "General exchange of views and introduction to reports submitted on national activities". The Subcommittee recommended that the Secretariat continue to invite Member States to submit annual reports on their space activities.

16. The Subcommittee noted with satisfaction the interest that States and organizations were showing in the agenda item entitled "General exchange of views and introduction to reports submitted on national activities". That, together with the tight agenda of the Subcommittee, demonstrated their strong interest in the work of the Subcommittee as a whole. It was suggested that, as a general guideline, statements made under the item on general exchange of views should, in the future, be roughly 5-10 minutes in length, though States should be encouraged to continue providing details on their national space programmes in their written reports on space activities referred to in paragraph 15 above.

F. Symposiums

17. Pursuant to General Assembly resolution 56/51 of 10 December 2001, a symposium on the theme "Remote sensing for substantive water management in

arid and semi-arid areas" was organized by COSPAR and IAF. The first part of the symposium, entitled "Remote sensing to support water allocation decisions", was held on 25 February 2002 and was chaired by J. Ortner of IAF and S. Vibulsresth of COSPAR. The second part of the symposium, entitled "New technologies for better water management", was held on 26 February 2002 and was chaired by J. Aschbacher of COSPAR and B. Coquil of IAF.

18. The presentations to the symposium included the following: "Overview of water management and role of remote sensing in the field", by Y. Kerr of COSPAR; "Overview of water management in arid and semi-arid areas: comparison of traditional methods and techniques using remote sensing technology", by D. El-Hadani of COSPAR; "Remote sensing for water management in Italy: operational and development aspects", by F. Nirchio of IAF; "Remote sensing for water management in India", by G. M. Nair of IAF; "Remote sensing application to sustainable water resources management in arid and semi-arid regions in Brazil", by E. Novo of IAF; "New technologies for better water management", by P. Houser of COSPAR; "Remote sensing for water management in Pakistan", by J. Ali of IAF; "Satellite precipitation measurements", by A. Gruber of COSPAR; and "Remote sensing for water management in China", by Li Jiren of IAF.

19. Pursuant to General Assembly resolution 56/51, a symposium on the theme "Expanding operational applications of very high resolution remote sensing: potential and challenges in civilian applications" was held on 4 March 2002 to strengthen the partnership of the Subcommittee with industry. The symposium was moderated by B. Mahone of the Aerospace Industries Association of America, Inc.

20. The presentations to the symposium included the following: "Cosmo-SKYMed remote sensing applications", by L. Candela of the Italian Space Agency (ASI) and L. Rossi of e-GEOS; "Current and future remote sensing applications: an American perspective", by B. Mahone of the Aerospace Industries Association of America, Inc.; "Russian high-resolution data: status, trends and applications", by A. Movlyav of Sovinformsputnik; "Building partnership with end-users: operational use of very-high resolution data for development activities; Asian perspectives", by M.Y.S. Prasad of Antrix; "High-resolution imagery for sustainable development", by A. Fortescue of the Satellite Applications Centre of the Council for Scientific and Industrial Research of South Africa; "Very high resolution data and geographic information systems as effective tools for controlling the planned land use", by H. Lopez of Geosystems; and "Spot 5: a new strategy for social and economic development", by Y. Béchacq of Spot Image.

21. The presentations to the symposium were followed by a panel discussion on the theme "How industry can turn the potential of very high resolution remote sensing into practical applications for the benefits of all".

G. Adoption of the report of the Scientific and Technical Subcommittee

22. After considering the various items before it, the Subcommittee, at its 579th meeting, on 8 March 2002, adopted its report to the Committee on the Peaceful Uses of Outer Space, containing its views and recommendations as set out in the paragraphs below.

II. United Nations Programme on Space Applications

23. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee considered an item on the United Nations Programme on Space Applications.

24. At the 565th meeting, on 27 February 2002, the Expert on Space Applications made a statement outlining the activities carried out and planned under the United Nations Programme on Space Applications.

25. The representatives of Austria, Brazil, Chile, Colombia, France, India, Iraq, Japan, Morocco and the United States made statements under this agenda item. A statement was also made by the observer for SGAC.

26. In accordance with General Assembly resolution 56/51, the Subcommittee, at its 565th meeting, on 27 February 2002, reconvened the Working Group of the Whole, under the chairmanship of Muhammad Nasim Shah (Pakistan). The Working Group of the Whole held 11 meetings from 27 February to 8 March 2002.

27. At its 579th meeting, on 8 March 2002, the Subcommittee endorsed the report of the Working Group of the Whole, which is contained in annex II to the present report.

A. Activities of the United Nations Programme on Space Applications

28. The Subcommittee had before it the report of the Expert on Space Applications (A/AC.105/773). The Subcommittee noted that the United Nations Programme on Space Applications for 2001 had been carried out satisfactorily and commended the work accomplished by the Expert in that regard.

29. The Subcommittee noted with appreciation that, since its previous session, additional contributions for 2001 had been offered by various Member States and organizations and had been acknowledged in the report of the Expert (A/AC.105/773, paras. 37 and 38). The Subcommittee also noted with appreciation that the Government of Austria had provided an associate expert to support the implementation of the United Nations Programme on Space Applications in 2001.

30. The Subcommittee continued to express its concern over the still limited financial resources available for carrying out the United Nations Programme on Space Applications and appealed to Member States to support the Programme through voluntary contributions. The Subcommittee was of the view that the limited resources of the United Nations should be focused on the activities with the highest priority; it noted that the United Nations Programme on Space Applications was the priority activity of the Office for Outer Space Affairs.

31. The Subcommittee noted that the United Nations Programme on Space Applications was assisting developing countries and countries with economies in transition in participating in and benefiting from space-related activities as proposed in the recommendations of UNISPACE III, in particular those contained in the Vienna Declaration on Space and Human Development.[1]

32. The Subcommittee noted that the United Nations Programme on Space Applications was aimed at promoting, through international cooperation, the use of space technologies and space-related data for sustainable economic and social development in developing countries by raising the awareness of decision makers of the cost-effectiveness and additional benefits to be obtained; establishing or strengthening the capacity in developing countries to use space technology; and strengthening outreach activities to disseminate awareness of the benefits obtained. The Subcommittee also noted that, in implementing the Programme, the Expert on Space Applications would take into consideration the guidelines provided by the Working Group of the Whole, contained in annex II to the present report.

33. The Subcommittee noted that, in addition to the United Nations conferences, training courses, workshops and symposiums planned for 2002 (see para. 39 below), there would be other activities of the Programme in 2002, focusing on:

(a) Supporting education and training for building capacity in developing countries, in particular through the regional centres for space science and technology education;

(b) Providing technical assistance to promote the use of space technologies in development programmes, in particular by continuing to support or initiate pilot projects as follow-up to past activities of the Programme;

(c) Enhancing access to space-related data and other information for dissemination to the general public and carrying out outreach activities to promote the participation of youth in space activities.

1. Year 2001

United Nations conferences, training courses and workshops

34. With regard to the activities of the United Nations Programme on Space Applications carried out in 2001, the Subcommittee expressed its appreciation to the following:

(a) The Government of the Syrian Arab Republic, as well as ESA and COSPAR, for co-sponsoring the Fourth United Nations/European Space Agency/Committee on Space Research Workshop on Data Analysis and Image-Processing Techniques, hosted by the General Organization of Remote Sensing (GORS) of the Syrian Arab Republic and held in Damascus from 25 to 29 March 2001;

(b) The Government of Sweden, represented by the Swedish International Development Cooperation Agency (Sida), for co-sponsoring the Eleventh United Nations/Sweden International Training Course on Remote Sensing Education for Educators, hosted by Stockholm University and Satellus AB of Metria and the National Land Survey of Sweden and held in Stockholm and Kiruna, Sweden, from 2 May to 9 June 2001;

(c) The Government of Mauritius, as well as ESA, the Centre national d'études spatiales (CNES) of France, the German Space Agency (DLR), the National Aeronautics and Space Administration (NASA) of the United States, the National Astronomical Observatory of Japan and the Planetary Society, for co-sponsoring the Tenth United Nations/European Space Agency Workshop on Basic Space Science: Exploring the Universe; Sky Surveys, Space Exploration and Space Technologies, hosted by the University of Mauritius and held in Reduit, Mauritius, from 25 to 29 June 2001;

(d) The Government of Malaysia, as well as the Government of the United States, for co-sponsoring the First United Nations/United States of America Workshop on the Use of Global Navigation Satellite Systems, hosted by the Department of Survey and Mapping Malaysia, Ministry of Land and Cooperative Development of Malaysia, and held in Kuala Lumpur from 20 to 24 August 2001;

(e) ESA, for co-sponsoring the United Nations Meeting of Experts on the Regional Centres for Space Science and Technology Education: Status and Future Developments, hosted by the European Space Research Institute (ESRIN) of ESA and held in Frascati, Italy, from 3 to 7 September 2001;

(f) The Government of Austria, as well as ESA, for co-sponsoring the Second United Nations/Austria/European Space Agency Symposium on Enhancing the Participation of Youth in Space Activities, hosted by the Research Centre Graz of the Austrian Academy of Sciences and held in Graz, Austria, from 17 to 20 September 2001;

(g) The Government of France, as well as IAF, ESA and CNES, for co-sponsoring the United Nations/International Astronautical Federation Workshop on Making Space Applications Operational: Opportunities and Challenges for Sustainable Development, hosted by the École des Mines in Albi, France, and held in Albi, France, from 27 to 29 September 2001;

(h) The Government of France, as well as the Subcommittee on Small Satellites for Developing Nations of the International Academy of Astronautics, for co-sponsoring the United Nations/International Academy of Astronautics Workshop on Small Satellites at the Service of Developing Countries: the African Perspective, held in Toulouse, France, on 2 October 2001;

(i) The Government of the United States, as well as the Government of Austria, the European Commission and the Austrian Space Agency, for co-sponsoring the Second United Nations/United States of America Regional Workshop on the Use of Global Navigation Satellite Systems, hosted by Austria and the Austrian Space Agency and held in Vienna from 26 to 30 November 2001.

Long-term fellowships for in-depth training

35. The Subcommittee expressed appreciation to ESA for having offered two six-month fellowships for the period 2001-2002 for research in remote-sensing technology at the ESRIN facilities of ESA in Frascati, Italy, as well as three one-year fellowships in communications systems, in space antennas and electromagnetics and in remote sensing instrumentation for the same period at the European Space Research and Technology Centre of ESA in Noordwijk, Netherlands.

36. The Subcommittee noted that it was important to increase the opportunities for in-depth education in all areas of space science, technology and applications projects through long-term fellowships and urged Member States to make such opportunities available at their relevant institutions.

Technical advisory services

37. The Subcommittee took note of the following technical advisory services provided under the United Nations Programme on Space Applications in support of activities and projects promoting regional and global cooperation in space applications:[2]

(a) Collaboration with ESA and Japan on follow-up activities relating to the series of workshops on basic space science;

(b) Providing assistance to support the growth and operation of the Asia-Pacific Satellite Communications Council;

(c) Collaboration with AIAA on the sixth workshop on the theme "International space cooperation: addressing challenges of the new millennium", held in Seville, Spain, from 11 to 15 March 2001, including sponsorship of participants from developing countries;

(d) Collaboration with the Disaster Management Support Group of the Committee on Earth Observation Satellites (CEOS) in identifying the concerns of institutions from developing countries with disaster management functions for inclusion in the work of the Support Group; and collaboration with the Working Group on Education and Training of CEOS in identifying and recommending action that CEOS members might take to strengthen the capacity of developing countries to utilize Earth observation data;

(e) Collaboration with ESA and the Department of Economic and Social Affairs of the Secretariat in providing technical and training assistance required for implementing projects on the use of Earth observation data for monitoring glaciers and snow cover in Latin America and for coastal management in Asia aimed at strengthening the capacity of participating institutions in the use of Earth observation data for resource management.

Promotion of greater cooperation in space science and technology

38. The Subcommittee noted that the United Nations Programme on Space Applications had co-sponsored the participation of scientists from developing countries in the United Nations/International Astronautical Federation Workshop on Making Space Applications Operational: Opportunities and Challenges for Sustainable Development, held in Albi, France, in September 2001, and the participation of those scientists in the fifty-second International Astronautical Congress, held in Toulouse, France, from 1 to 5 October 2001.

2. Year 2002

United Nations conferences, training courses, workshops and symposiums

39. The Subcommittee recommended the approval of the following programme of training courses, workshops and symposiums, to be organized jointly by the Office for Outer Space Affairs, host Governments and other entities in 2002:

(a) United Nations Workshop on Satellite-Aided Search and Rescue, to be held in Bangalore, India, from 18 to 22 March 2002;

(b) Third United Nations/United States of America Regional Workshop on the Use of Global Navigation Satellite Systems, to be held in Santiago, Chile, from 1 to 5 April 2002;

(c) Twelfth United Nations/Sweden International Training Course on Remote Sensing Education for Educators, to be held in Stockholm and Kiruna, Sweden, from 2 May to 8 June 2002;

(d) Fourth United Nations/United States of America Regional Workshop on the Use of Global Navigation Satellite Systems, to be held in Lusaka from 15 to 19 July 2002;

(e) United Nations/South Africa/European Space Agency Workshop on the Use of Space Technology in Sustainable Development, co-sponsored by Astrium, to be held in Stellenbosch, South Africa, in August 2002;

(f) Eleventh United Nations/European Space Agency Workshop on Basic Space Science, to be held in Córdoba, Argentina, from 9 to 13 September 2002;

(g) Third United Nations/Austria/European Space Agency Symposium on Enhancing the Participation of Youth in Space Activities, to be held in Graz, Austria, from 9 to 12 September 2002;

(h) United Nations/Economic Commission for Africa/European Space Agency/Committee on Earth Observation Satellites Workshop on the Use of Space Technology in Disaster Management, for the benefit of Africa, to be held in Addis Ababa from 1 to 5 July 2002;

(i) United Nations/International Astronautical Federation Workshop on Space Solutions for Global Problems: Building Working Partnerships with All

Stakeholders in Human Security and Development, to be held in Houston, Texas, United States, from 10 to 12 October 2002;

(j) Third United Nations/International Academy of Astronautics Workshop on Small Satellites at the Service of Developing Countries: Beyond Technology Transfer, to be held in Houston, Texas, United States, on 12 October 2002;

(k) United Nations/Economic and Social Commission for Asia and the Pacific/European Space Agency/Committee on Earth Observation Satellites Workshop on the Use of Space Technology in Disaster Management, for the benefit of Asia and the Pacific, to be held in Bangkok from 11 to 15 November 2002;

(l) United Nations/United States of America International Meeting of Experts on the Use of Global Navigation Satellite Systems, to be held in Vienna from 11 to 15 November 2002;

(m) Workshops and training courses to be organized at the regional centres for space science and technology education, affiliated to the United Nations.

3. Year 2003

40. The Subcommittee noted that the following activities had been proposed to be jointly organized by the Office for Outer Space Affairs, host Governments and other entities in 2003:

(a) Thirteenth United Nations/Sweden International Training Course on Remote Sensing Education for Educators, to be held in Stockholm and Kiruna, Sweden, in May-June 2003;

(b) United Nations/Austria Symposium on the Operational Use of Space Technology in Sustainable Development, to be held in Graz, Austria, in September 2003;

(c) United Nations/International Astronautical Federation Workshop on the Use of Space Technology for the Benefit of Developing Countries, to be held in Bremen, Germany, in September-October 2003;

(d) Twelfth United Nations/European Space Agency Workshop on Basic Space Science, for the benefit of developing countries in Asia and the Pacific;

(e) United Nations workshop on remote sensing applications for the benefit of developing countries in Western Asia, to be held in Damascus in March 2003;

(f) United Nations Regional Workshop on the Use of Space Technology for Disaster Management, for the benefit of countries in Western Asia, to be held in Lebanon;

(g) United Nations Regional Workshop on the Use of Space Technology for Disaster Management, for the benefit of countries in Central and Eastern Europe;

(h) Several workshops to be organized at the regional centres for space science and technology education, affiliated to the United Nations.

B. International space information service

41. The Subcommittee noted with satisfaction that the thirteenth in the series of documents containing selected papers from the activities of the Programme, entitled *Seminars of the United Nations Programme on Space Applications*,[3] had been issued. The Subcommittee also noted with satisfaction the publication of *Highlights in Space 2001*,[4] which had been compiled from a report prepared by COSPAR on space research and a report prepared by IAF on space technology and applications, and expressed its appreciation to COSPAR, IAF and the International Institute of Space Law for their contributions. The Subcommittee also noted with satisfaction the publication of a directory on education, training, research and fellowship opportunities in space science and technology and its applications,[5] which was also available on the web site of the Office for Outer Space Affairs (http://www.oosa.unvienna.org). Finally, the Subcommittee noted that the publication in hard copy of the directory of information systems on space science and technology and the directory of experts would not be continued because similar, more up-to-date information was widely disseminated by various space agencies and space-related organizations and because of financial constraints.

42. The Subcommittee noted with satisfaction that the Secretariat had continued to enhance the International Space Information Service and the web site of the Office for Outer Space Affairs, which contained, among other things, a regularly updated index of objects launched into outer space. The Subcommittee also noted with satisfaction that the Secretariat was maintaining a web site on the

coordination of outer space activities within the United Nations system (http://www.uncosa. unvienna.org).

C. Regional and interregional cooperation

43. The Subcommittee noted with appreciation the continuing efforts undertaken by the United Nations Programme on Space Applications, in accordance with General Assembly resolution 45/72 of 11 December 1990, in leading an international effort to establish regional centres for space science and technology education in existing national or regional educational institutions in developing countries, as contained in the document entitled "Regional centres for space science and technology education (affiliated to the United Nations)" (A/AC.105/749). The Subcommittee also noted that, once established, each centre could expand and become part of a network that could cover specific programme elements in established institutions related to space science and technology in each region.

44. The Subcommittee recalled that the General Assembly, in its resolution 50/27 of 6 December 1995, had endorsed the recommendation of the Committee that the centres be established on the basis of affiliation to the United Nations as early as possible and that such affiliation would provide the centres with the necessary recognition and would strengthen the possibilities of attracting donors and of establishing academic relationships with national and international space-related institutions.

45. The Subcommittee noted with satisfaction that the African Regional Centre for Space Science and Technology—in French Language had held in 2001 a workshop on remote sensing and geographic information systems, followed by a nine-month course on the same subjects. The Subcommittee also noted that a nine-month course on satellite meteorology had begun in 2002.

46. The Subcommittee noted with satisfaction that the African Regional Centre for Space Science and Technology Education—in English Language had held in 2001 a workshop on remote sensing and geographic information systems followed by a nine-month training course on the same subjects.

47. The Subcommittee noted with satisfaction that the Centre for Space Science and Technology Education in Asia and the Pacific had held in Dehra Dun, India, its third Advisory Committee Meeting on 15 May 2001 and its sixth Governing Board Meeting on 17 May 2001. The Subcommittee also noted that the third postgraduate course in satellite meteorology and global climate, the third postgraduate course in space and atmospheric science and the seventh postgraduate course in remote sensing and geographic information systems were scheduled to begin in 2002.

48. The Subcommittee emphasized the importance of regional and international cooperation in making the benefits of space technology available to all countries by such cooperative activities as sharing payloads, disseminating information on spin-off benefits and ensuring compatibility of space systems.

III. Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)

49. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee considered implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III). Pursuant to paragraph 19 of resolution 56/51, the Subcommittee requested the Working Group of the Whole, established at the 565th meeting of the Subcommittee, on 27 February 2002, to consider the issue.

50. At its 579th meeting, on 8 March 2002, the Subcommittee endorsed the recommendations of the Working Group of the Whole concerning implementation of the recommendations of UNISPACE III, as contained in the report of the Working Group of the Whole (see annex II).

51. The representatives of Colombia, France, Germany, Greece, Hungary, India, Italy, Japan, the United Kingdom and the United States made statements under this item. The observer for ESA also made a statement.

52. Spaceweek International Association, a non-governmental organization, informed the Subcommittee about activities throughout the world for World Space Week 2001.

53. The Subcommittee took note of the invitation by the Director of the Office for Outer Space Affairs to States that had not done so already to appoint national coordinators for World Space Week. The Subcommittee also took note of the Office's invitation to States to consider hosting United Nations events for World Space Week in future years.

54. The Subcommittee heard a presentation entitled "The activities of the Space Generation Advisory Council (SGAC) in support of the United Nations Programme on Space Applications" by observers for SGAC, a non-governmental organization.

55. The view was expressed that it was important for participants in the action teams on the recommendations of UNISPACE III to adopt a transparent approach and open-minded attitude. That delegation encouraged action teams to carry out an exhaustive and in-depth investigation of the needs of all Member States, including developing countries, and involve all relevant entities, including States, intergovernmental organizations and non-governmental entities, in their work.

IV. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment

56. In accordance with General Assembly resolution 56/51, the Subcommittee continued its consideration of the item relating to remote sensing of the Earth.

57. In the course of the debate, delegations reviewed national and cooperative programmes in remote sensing. Examples were given of national programmes and bilateral, regional and international cooperation. The representatives of Brazil, Canada, China, France, Hungary, India, Japan, Peru, Romania and the United States made statements under this agenda item.

58. The following technical presentations were made on the issue of remote sensing of the Earth by satellite:

(a) "French/Indian programme Megha Tropique", by the representatives of France and India;

(b) "French project PACTES", by the representative of France;

(c) "Monitoring World Heritage sites by remote sensing", by the representative of Hungary;

(d) "Applications of remote sensing data in the Islamic Republic of Iran", by the representative of the Islamic Republic of Iran;

(e) "Success of Tropical Rainfall Measurement and its impact on understanding of the global water cycle", by the representative of Japan;

(f) "Global partnerships for a Global Precipitation Measurement", by the representative of the United States;

(g) "ESA's Envisat mission: status and applications", by the observer for ESA.

59. The Subcommittee emphasized the importance of providing non-discriminatory access to state-of-the-art remote sensing data and to derived information at reasonable cost and in a timely manner and of building capacity in the adoption and use of remote sensing technology, in particular to meet the needs of developing countries.

60. The Subcommittee considered that international cooperation in the use of remote sensing satellites should be encouraged. It noted the importance of compatibility and complementarity of existing and future remote sensing systems, as well as the need for continuity in the acquisition of data. The Subcommittee also noted the importance, in particular for developing countries, of sharing experiences and technologies, of cooperating through international and regional remote sensing centres and of working on collaborative projects. The Subcommittee took note of the important roles played by organizations such as CEOS and by mechanisms such as the Integrated Global Observing Strategy (IGOS) Partnership towards international cooperation in matters relating to applications of remote sensing.

61. The Subcommittee emphasized the importance of remote sensing systems for advancing sustainable development, including monitoring of the Earth's environment, management of natural resources, disaster monitoring and prevention and climate monitoring.

62. The Subcommittee noted that the World Summit on Sustainable Development, to be held in Johannesburg, South Africa, from 26 August to 4 September 2002, would present an opportunity to promote the use of space applications for sustainable development.

63. The view was expressed that an international framework for global observation by multiple satellites should be established with the participation of many countries, that in situ observation systems should be enhanced through international cooperation and that it was essential to achieve an effective framework for global observation by coordinating satellite and in situ observations.

64. The view was expressed that the reduced availability of very high resolution remote sensing images, evidenced during recent events in Afghanistan, was a matter of concern to the fast-growing community of users of such images.

V. Use of nuclear power sources in outer space

65. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee continued its consideration of the item on the use of nuclear power sources in outer space under the work plan adopted at its thirty-fifth session (A/AC.105/697 and Corr.1, annex III, appendix).

66. The Subcommittee had before it a note by the Secretariat, entitled "National research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris" (A/AC.105/770 and Add.1). The Subcommittee also had before it the report on the multi-year work plan on the peaceful uses of nuclear power sources in outer space (A/AC.105/C.1/L.256 and Corr.1 and Add.1).

67. The representatives of Argentina, Canada, France, the Russian Federation, the United Kingdom and the United States made statements under this agenda item.

68. The Subcommittee recalled that the General Assembly, in its resolution 47/68 of 14 December 1992, had adopted the Principles Relevant to the Use of Nuclear Power Sources in Outer Space. The Subcommittee noted that the Committee on the Peaceful Uses of Outer Space, at its forty-fourth session, had recalled its agreement that the Principles should remain in their current form until amended and that, before making any amendment to them, proper consideration should be given to the aims and objectives of the proposed revision. The Committee had agreed that while a revision of the Principles was not necessary at the current stage, it was important that States making use of nuclear power sources should conduct their activities in full accordance with the Principles.

69. The Scientific and Technical Subcommittee agreed that, at the present time, revision of the Principles was not warranted. It also agreed that, until a firm scientific and technical consensus had been reached on their revision, it would be inappropriate to pass on the topic to the Legal Subcommittee.

70. The Scientific and Technical Subcommittee was informed of a new nuclear systems initiative contained in the NASA proposed budget for 2003. The long-term, two-part programme was intended: (a) to develop a new generation of radioisotope power systems for the provision of electrical power to spacecraft and their scientific instruments for missions to planetary surfaces and in deep space; and (b) to develop a uranium-fuelled fission reactor and advanced electric propulsion technologies to significantly improve future capabilities to explore the solar system.

71. The Subcommittee noted with appreciation the work conducted by its Working Group on the Use of Nuclear Power Sources in Outer Space in accordance with the adopted work plan, including during the intersessional period since the thirty-eighth session of the Subcommittee, in 2001, and the contributions made by individual member States to the draft report.

72. The view was expressed that the work being undertaken by the Subcommittee through its Working Group would provide an important basis for an analysis of the possible need to revise or amend the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, in particular in view of the development of applications in the use of nuclear energy since 1992 and the likely further advances in the field in the future.

73. The view was expressed that, because of the unique nature of the use of nuclear power sources in

outer space, it would be entirely inappropriate for the Committee on the Peaceful Uses of Outer Space and its subcommittees to delegate the responsibility of any possible revision or amendment of the Principles to another organization or body.

74. The view was expressed that it would be timely to initiate a review of the Principles and that IAEA could make an important contribution in that regard. It would be natural to cooperate with IAEA in such activity.

75. In accordance with General Assembly resolution 56/51, the Subcommittee, at its 561st meeting, on 25 February 2002, reconvened its Working Group on the Use of Nuclear Power Sources in Outer Space under the chairmanship of Sam A. Harbison (United Kingdom). The Working Group held 11 meetings.

76. At its 577th meeting, on 7 March 2002, the Subcommittee endorsed the report of the Working Group (see annex III to the present report). The Subcommittee also noted with satisfaction the finalization by the Working Group, in accordance with the work plan, of its report entitled "A review of international documents and national processes potentially relevant to the peaceful uses of nuclear power sources in outer space" (A/AC.105/C.1/L.256/Rev.1).*

77. The Scientific and Technical Subcommittee agreed that the Working Group should be requested to continue its work between the current session and the fortieth session of the Subcommittee, in 2003, in order to facilitate the Subcommittee's deliberations on the item. In particular, the Working Group should be requested to develop a set of potential options for consideration by the Subcommittee on any additional steps that might be deemed appropriate with regard to space nuclear power sources, including that of drawing up a further multi-year work plan. Development of those options could be initiated through informal consultations by interested members of the Working Group during the forty-fifth session of the Committee on the Peaceful Uses of Outer Space, in June 2002. The options would then be formally developed and presented to the Subcommittee at its fortieth session for consideration by member States.

VI. Means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system

78. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee continued to consider an agenda item on means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system. In accordance with the work plan adopted at its thirty-seventh session (A/AC.105/736, annex II, para. 40), the Subcommittee identified the barriers to the greater use of space applications and services within the United Nations system and examined specific means and mechanisms to eliminate those barriers.

79. The Subcommittee had before it the following documents:

(a) Report of the Inter-Agency Meeting on Outer Space Activities on its twenty-second session, held in Rome from 23 to 25 January 2002 (A/AC.105/779);

(b) Report of the Secretary-General on the coordination of outer space activities within the United Nations system: programme of work for 2002 and 2003 and future years (A/AC.105/780).

80. The Subcommittee recalled that a note by the Secretariat containing an analysis of replies from organizations of the United Nations system to a list of questions circulated by the Secretariat (A/AC.105/C.1/L.241 and Corr.1 and Add.1) had been distributed to the Subcommittee at its thirty-eighth session, in 2001. Among other things, the information included a description of potential obstacles to inter-agency coordination identified by organizations and ways and means of strengthening inter-agency efforts to expand the use of space science and technology.

81. The representatives of France, Hungary, Mexico and the Russian Federation made statements under this agenda item.

* To be issued subsequently as document A/AC.105/781.

82. The Subcommittee noted with satisfaction that the Inter-Agency Meeting on Outer Space Activities had held its twenty-second session in Rome from 23 to 25 January 2002. The Subcommittee also noted that the next session of the Inter-Agency Meeting was scheduled to be held in Vienna in early 2003, before the fortieth session of the Subcommittee.

83. The Subcommittee recalled that, at its thirty-eighth session, it had invited the Inter-Agency Meeting to consider the barriers to the use of space technology in the United Nations system and to consider how the Subcommittee could support the work of the Inter-Agency Meeting and the space-related activities of organizations of the United Nations system (A/AC.105/761, para. 81).

84. In that connection, the Subcommittee took note of the recommendation of the Inter-Agency Meeting (A/AC.105/779, para. 14) that closer coordination and timely information-sharing among government agencies represented at different forums on issues relating to space activities would be beneficial. In the opinion of the Inter-Agency Meeting, a government delegation to one forum of the system was not necessarily fully aware, in a timely manner, of the directions pursued by a delegation of the same country in a different forum. Closer coordination might be achieved through existing government mechanisms, resulting in coordination efforts similar to those being made by the organizations of the United Nations system at the inter-agency level.

85. The Subcommittee noted that, pursuant to a request by the Committee on the Peaceful Uses of Outer Space,[6] the Chairman of the Committee, in a letter dated 19 July 2001 to the Secretary-General (A/56/306), had brought to the Secretary-General's attention the need to consider the contributions of space science and technology to the achievement of the objectives of major United Nations conferences.

86. The Subcommittee also noted that the General Assembly, in paragraph 39 of its resolution 56/51, had invited all the organs, organizations and programmes of the United Nations system, in particular those participating in the Inter-Agency Meeting on Outer Space Activities, to identify recommendations of major United Nations conferences that could be implemented with the use of space science and technology. The Subcommittee further noted that, in response to that invitation, the Inter-Agency Meeting had agreed that the Office for Outer Space Affairs should analyse the outcome of the World Summit on Sustainable Development, with the assistance of organizations of the United Nations system, in order to identify recommendations that could be better implemented with the use of space science and technology. The Inter-Agency Meeting had taken that decision on the assumption that most of the issues addressed in the United Nations conferences held in recent years would be considered at the World Summit on Sustainable Development (A/AC.105/779, para. 45).

87. The Subcommittee took note of efforts by ESA and UNESCO to use remote sensing in support of the Convention for the Protection of the World Cultural and Natural Heritage.[7] The Subcommittee invited representatives of ESA, UNESCO and other bodies participating in that initiative, as well as Governments, to present their experiences to the Subcommittee at its fortieth session. Those presentations could be complemented by short reports from other United Nations entities on their use of remote sensing technologies. Based on the presentations, a discussion could be initiated within the Subcommittee about further areas in which remote sensing could be used. The presentations could also be useful as curricular materials for a training programme or distance-learning module on remote sensing applications.

88. The Subcommittee took note of the UNOSAT project in which the United Nations Institute for Training and Research, the United Nations Office for Project Services, CNES and a number of private companies were collaborating in order to provide rapid, online access to reliable geographic information for use in humanitarian programmes.

89. The view was expressed that cooperation with international organizations was difficult in countries lacking a national space agency or office that could act as a focal point for cooperation activities. For that reason, there was a need for international organizations and agencies from developed countries to give greater support to the regional centres for space science and technology education, affiliated to the United Nations.

90. The view was expressed that it was desirable to develop a universal comprehensive convention on international space law and that a proposal that could lead to such a convention, submitted by China, Colombia and the Russian Federation (A/AC.105/C.2/L.226), should be pursued. That delegation also

expressed the view that it might be desirable to create an international space organization, which might eventually become a specialized agency of the United Nations system that could act as a centre for international space cooperation, the development of space technology and the use of space for the benefit of developing countries. To avoid additional costs for the United Nations, it was suggested that the Committee on the Peaceful Uses of Outer Space could act as preparatory committee for an international conference to create an international space organization and for the negotiation of a universal comprehensive convention on international space law.

VII. Implementation of an integrated, space-based global natural disaster management system

91. In accordance with General Assembly resolution 56/51, the Subcommittee continued to consider an agenda item on the implementation of an integrated, space-based global natural disaster management system, in accordance with the work plan adopted at its thirty-eighth session (A/AC.105/736, annex II, para. 41). In accordance with the work plan, the Subcommittee reviewed existing and proposed satellite and data distribution systems that could be used operationally for disaster management and identified gaps in those systems.

92. The representatives of Brazil, Canada, China, Colombia, Ecuador, France, India, the Islamic Republic of Iran, Japan, Mexico, Peru and the United States made statements under this agenda item.

93. The Subcommittee heard the following technical presentations under this agenda item:

(a) "The International Charter: Space and Major Disasters", by the representative of France;

(b) "Space-based evaluation of fires with the BIRD microsatellite mission", by the representative of Germany;

(c) "Small satellites for monitoring and prediction of natural disasters", by the representative of the Russian Federation;

(d) "Disaster management aspects in India with the INSAT system", by the representative of India;

(e) "Reaching the unreached through WorldSpace", by S. Rangarajan of WorldSpace Corp.

94. The Subcommittee noted with satisfaction that, at the invitation of the Committee,[8] the observer for CEOS had made a presentation entitled "Disaster Management Support Group".

A. Existing and proposed satellite and data distribution systems that can be used operationally for disaster management

95. The Subcommittee noted that many disaster management efforts around the world were successfully using space technologies such as satellite remote sensing, global navigation satellite systems and satellite telecommunications, often in tandem with other technologies such as geographic information systems.

96. The Subcommittee noted that space technology solutions had the following comparative advantages:

(a) As disaster areas were generally inaccessible after the occurrence of disasters, Earth observation satellites offered an opportunity to provide extensive images of the affected areas;

(b) Due to their wide availability, Earth observation satellites had a high frequency and diverse range of coverage.

97. The Subcommittee noted the increasing number of existing satellite and data distribution systems available to support global disaster management activities, including but not limited to the following:

(a) The International Search and Rescue Satellite System (COMPAS-SARSAT), which was using satellites in low-Earth and geostationary orbits to detect and locate aviators, mariners and land-based users in distress and which in 2001 had contributed to saving 178 lives in the United States;

(b) Radar satellites such as RADARSAT-1 and the European remote sensing satellite (ERS-2), as well as the Disaster Watch programme, carried out by the Canadian Space Agency, which ensured that RADARSAT-1 was tasked to image disaster-affected areas and disaster-prone areas;

(c) The availability of Land Remote Sensing Satellite data and products from the Terra spacecraft and future missions through the Earth Observing System Data and Information System;

(d) The use of the communication capabilities of the Indian National Satellite (INSAT) series of satellites, including the use of search and rescue transponders, and the Indian Remote Sensing Satellite (IRS) series of satellites, for the monitoring of disaster events such as cyclones and the dissemination of early warning information and real-time coordination of relief operations;

(e) Meteorological satellites such as METEOSAT;

(f) Real-time data systems for the Moderate-resolution Imaging Spectroradiometer (MODIS), which were being developed throughout the world and which would enable the real-time sharing of MODIS data;

(g) Products obtained from the National Oceanic and Atmospheric Administration (NOAA) polar-orbiting operational environmental satellites (POES) and geostationary operational environmental satellites (GOES), which could be used, among other things, for volcanic ash detection and tracking and for monitoring heavy precipitation and tropical cyclones;

(h) The Tropical Rainfall Measuring Mission (TRMM), launched by Japan in cooperation with the United States, which was providing valuable data to support the prediction of heavy rainfall;

(i) The CBERS-1 Earth resource satellite of Brazil and China, which provided the capability to monitor complex environments such as high plateaux and deserts for the occurrence of landslides and floods;

(j) The use of global navigation satellite systems and radar interferometry to monitor deformation of the Earth's surface due to volcanic eruptions, earthquakes and landslides;

(k) National institutions coordinating or providing centralized support for disaster management activities in their countries.

98. The Subcommittee noted with satisfaction that, among others, the following space systems would become available and provide additional operational tools for disaster management:

(a) The Advanced Earth Observing Satellite II (ADEOS-II), to be launched by Japan in 2002, which was expected to achieve concentrated and integrated observations of the water cycle on a global scale, contributing to enhancing the prediction of heavy rain and other severe weather, as well as the Advanced Land Observing Satellite (ALOS), to be launched by Japan in 2004;

(b) The ESA Environmental Satellite (Envisat), which had been successfully launched during the thirty-ninth session of the Scientific and Technical Subcommittee.

99. The Subcommittee also welcomed the launch of experimental disaster management satellites, including the BIRD satellite of Germany, testing new technologies to monitor forest fires and similar disasters, and the Kompass satellite of the Russian Federation, testing the feasibility of using space technology for earthquake prediction.

100. The Subcommittee recognized the importance of international initiatives including CEOS, specifically its Disaster Management Support Group, and the International Strategy for Disaster Reduction. In particular, the Subcommittee noted that the Disaster Management Support Group had reaffirmed its commitment to participating in the Inter-Agency Task Force on Disaster Reduction and in the space technology and disaster management workshops and pilot projects of the United Nations Programme on Space Applications.

101. The Subcommittee noted with satisfaction that the International Charter: Space and Major Disasters had five members: CSA, ESA, CNES, the Indian Space Research Organization and NOAA. Since it had been formally declared operational, on 1 November 2000, the Charter had been activated 13 times, providing invaluable support in mitigating the effects of disasters such as landslides, earthquakes, oil spills, floods and volcanic eruptions.

102. The Subcommittee noted with satisfaction that the Office for Outer Space Affairs was considering becoming a cooperating body of the Charter, serving as the focal point for the Charter in the United Nations system.

103. The Subcommittee noted that it was highly important to enhance the scientific understanding of natural disasters through international joint observation

and research and to use that understanding effectively for the prediction and prevention of natural disasters, as well as to mitigate their damage. As part of that effort, satellite data were an essential source of information for the management of natural disasters.

104. The Subcommittee noted that operational access to global satellite datasets was fundamental to scientific and technological advancement in the development of integrated space-based disaster management systems.

B. Gaps in satellite and data distribution systems

105. The Subcommittee noted that, in order to make effective use of space-based information for disaster management, it was important to identify and address gaps in the current systems in terms of inadequacy of reliable information for disaster-affected areas.

106. The Subcommittee noted that the CEOS Disaster Management Support Group had conducted a study of gaps in the existing constellation of Earth observation satellites.

107. The Subcommittee identified the following gaps in satellite and data distribution systems: (a) inadequate communication support to relief operations; (b) lack of coordination between government agencies; and (c) the need to establish a system of operational disaster support centres in some countries.

108. The view was expressed that there were insufficient past climate data, which were needed for rainfall forecasts.

109. The Subcommittee recognized that proper disaster management depended not only on the availability and dissemination of information, but also on the effective use of that information, which in turn depended on the capacity available in terms of human resources and organizational infrastructure.

110. The Subcommittee took note of the following initiatives to develop expertise in using space-based technologies for disaster management:

(a) The United Nations Regional Workshop on the Use of Space Technology in Disaster Management for Africa, to be organized jointly with the Economic Commission for Africa and held in Addis Ababa from 1 to 5 July 2002;

(b) The United Nations Regional Workshop on the Use of Space Technology in Disaster Management for Asia and the Pacific, to be organized jointly with the Economic and Social Commission for Asia and the Pacific and held in Bangkok from 11 to 15 November 2002;

(c) The implementation of pilot projects in Latin America and the Caribbean as a follow-up activity to the United Nations/Chile/European Space Agency Workshop on the Use of Space Technology in Disaster Management, held in La Serena, Chile, from 13 to 17 November 2000.

111. The view was expressed that, in recent years, natural disasters such as violent windstorms and floods had been taking place more frequently because of climate changes.

VIII. Space debris

112. In accordance with General Assembly resolution 56/51, the Subcommittee considered an agenda item on space debris in accordance with the work plan adopted at its thirty-eighth session (A/AC.105/761, para. 130). In accordance with the work plan, the Subcommittee focused its discussion on space debris impact hazards and shielding.

113. The Subcommittee had before it a note by the Secretariat entitled "National research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris", compiling responses received from Member States and international organizations on the issue (A/AC.105/770 and Add.1). The Subcommittee invited member States to continue to provide reports on the issue in future years.

114. The representatives of China, the Czech Republic, France, Germany, India, Japan, the Russian Federation and the United States made statements on this item.

115. The Subcommittee heard the following scientific and technical presentations on the subject of space debris:

(a) "Space debris hazards and shielding", by the representative of France;

(b) "Space debris end-to-end service: status report", by the representative of Germany;

(c) "Overview of space debris research and practice in Japan with an emphasis on impact hazards and shielding", by the representative of Japan;

(d) "The implementation of cost-effective debris protection in unmanned spacecraft", by the representative of the United Kingdom;

(e) "United States of America national research on space debris and impact hazards", by the representative of the United States;

(f) "Space debris research at the European Space Agency", by the observer for ESA.

116. The Subcommittee noted with satisfaction that, at the invitation of the Committee on the Peaceful Uses of Outer Space,[9] a representative of the Inter-Agency Space Debris Coordination Committee (IADC) had made a technical presentation on its activities and views, with particular regard to the IADC Mitigation Guidelines.

117. The Subcommittee noted with satisfaction that a process of controlled de-orbiting was being gradually introduced by national space agencies for large artificial space objects in order to decrease the probability of collisions in low-Earth orbit, which could lead to the creation of secondary debris, and also to minimize possible damage on the ground caused by falling space objects. In particular, it noted the successful and safe de-orbiting of the Mir orbital station of the Russian Federation in March 2001.

118. The Subcommittee agreed that member States should pay more attention to the problem of collisions of space objects, including those with nuclear power sources on board, with space debris and to other aspects of space debris. It noted that the General Assembly, in its resolution 56/51, had called for the continuation of national research on the question, for the development of improved technology for the monitoring of space debris and for the compilation and dissemination of data on space debris. The Subcommittee agreed that national research on space debris should continue and that member States and international organizations should make available to all interested parties the results of that research, including information on practices adopted that had proved effective in minimizing the creation of space debris.

119. The Subcommittee noted that, although adequate attention was being given by member States and space agencies to the above-mentioned issues, further research would be needed to determine whether identified mitigation measures were cost-effective and could minimize the short-term cost while maximizing the long-term benefit for the space environment.

120. Some delegations expressed the view that the Committee should examine all aspects of the space debris issue. Therefore, in addition to the discussion of technical aspects, it should also investigate economic, legal and ethical aspects. Such a review could be initiated by the Legal Subcommittee without any negative consequences to the work of the Scientific and Technical Subcommittee on scientific and technical aspects of space debris.

121. The view was expressed that moving the issue of space debris to the Legal Subcommittee in order to address particular legal questions or to initiate development of principles concerning space debris was not desirable at the present time. The Technical Report on Space Debris (the "Rex Report") (A/AC.105/720) had provided an understanding of the debris environment, efforts to model the environment and assess risks and space debris mitigation measures being undertaken by various operators. In the view of that delegation, common understanding on debris mitigation practices would be an appropriate next step to further the technical foundation on the issue. In that delegation's view, the Subcommittee's support of the IADC debris mitigation proposals, stating the desirability of following such practices, or a General Assembly resolution on the topic, might achieve the goal of expediting international adoption of voluntary debris mitigation measures under the work plan of the Subcommittee adopted in 2001.

122. The view was expressed that detailed understanding of scientific and technical aspects of the space debris issue, as well as economic consequences of space debris, should be reached before any mandatory international regulations were developed. In the view of that delegation, scientific and technical aspects of space debris could be investigated in the Subcommittee taking advantage of IADC expertise on the subject. However, more complex issues, such as pollution of

outer space by possible testing of weapons in space, should be addressed by the Committee itself.

123. The view was expressed that the recommended practice of disposing of satellites at a safe distance from the geostationary orbit before the end of their operational life was followed by some operators, but had not been applied universally; in fact, only 2 of the 12 geostationary spacecraft reaching the end of their useful life in 2001 had been re-orbited in accordance with the IADC recommendation. In the view of that delegation, operators that followed the practice of re-orbiting were at economic disadvantage compared with those leaving inactive spacecraft in the orbital belt, endangering active spacecraft. Evidently, the voluntary recommendation was not sufficient and steps should be initiated to develop mandatory regulations in order to end the disadvantage of operators regularly re-orbiting their satellites.

124. The view was expressed that a significant fraction of the total mass of the space debris population was concentrated in a few large space objects that had terminated their activities but were still intact. They were increasing the probability of collision in orbit, but official information about the end of their functional life was provided by only a few States. That delegation expressed the view that the online index of objects launched into outer space, recently developed by the Secretariat, could provide easily accessible and updated information about the functional status of objects registered with the Secretary-General, based on official notification from the owner or operator. Such timely and systematic provision of the official information on the functional status of space objects would further increase the usefulness of the index and offer a better factual basis for studies of orbital debris.

125. The view was expressed that the principle of "common but differentiated responsibility", meaning that those who were largely responsible for the creation of the present environmental situation and those who had the capability to take action for mitigation, should take lead roles in dealing with the situation, should be applied to the environmental issue of space debris.

126. In accordance with its work plan on space debris (A/AC.105/761, para. 130), the Subcommittee invited IADC to present its proposals on debris mitigation, based on consensus among the IADC members, at the fortieth session of the Subcommittee, in 2003. At that session, the Subcommittee would review the IADC proposals and discuss the means of endorsing their utilization.

IX. Examination of the physical nature and technical attributes of the geostationary orbit and of its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries

127. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee continued its consideration of the item relating to the geostationary orbit and space communications.

128. The representatives of Colombia, Ecuador, Indonesia, Mexico, Peru and the Russian Federation made statements on this item.

129. The Subcommittee noted with satisfaction that, following the invitation of the Subcommittee at its thirty-eighth session (A/AC.105/761, para. 141), IAU had made a special presentation on the status of its work on frequency interference with radio astronomy.

130. The Subcommittee noted with satisfaction that the International Telecommunication Union (ITU), IAU and the Organisation for Economic Cooperation and Development (OECD) were cooperating closely on the issue of communications interference with radio astronomy. It noted that present regulations on the frequency allocations for radio astronomy were still not sufficient to guarantee that the regions of spectrum allocated to radio astronomy would be kept free of interference from some incompatible communications services. It also noted that standards of the highest quality would be needed to ensure unspoiled reception of natural radio emissions from the universe.

131. The Subcommittee agreed that ITU, IAU and OECD should be invited to give presentations at its fortieth session on the status of their work on frequency interference with radio astronomy.

132. The Subcommittee agreed that consensus reached by the Committee[10] on the statement "The geostationary orbit, characterized by its special properties, is part of outer space" would facilitate possible future discussion of the geostationary orbit, which could then focus on possible evolution of scientific knowledge and measures to increase the benefits of the geostationary orbit for all countries, in particular developing countries.

133. Some delegations reiterated the view that the geostationary orbit was a limited natural resource with a number of sui generis characteristics, which risked saturation, and that, therefore, assurances should be given that the benefits of its exploitation would be extended to all nations, regardless of their present technical capabilities. Those delegations expressed the view that access to the geostationary orbit should be granted to all nations on an equitable and rational basis, with the Committee on the Peaceful Uses of Outer Space and ITU strengthening their cooperation towards that goal, taking into particular account the needs and interests of developing countries.

134. The view was expressed that saturation of the geostationary orbit and associated radio frequencies could be substantially reduced by applying ITU radio regulations, based on recent decisions of the world radiocommunication conferences. That should decrease the number of so-called "paper satellites" and stimulate greater use of higher radio frequencies, faster transmissions and non-geostationary satellite orbits.

X. International cooperation in limiting obtrusive space advertising that could interfere with astronomical observations

135. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee considered a single issue/item for discussion on international cooperation in limiting obtrusive space advertising that could interfere with astronomical observations.

136. The Subcommittee had before it a background study, prepared by IAU and endorsed by COSPAR, entitled "Obtrusive space advertising and astronomical research" (A/AC.105/777). The observer for IAU introduced the background study through a technical presentation.

137. The representative of the United States made a statement under the agenda item. The Subcommittee also heard a technical presentation entitled "Southern African Large Telescope: status report" by the representative of South Africa.

138. The Subcommittee noted that preservation of a balance between the wide variety of uses of outer space, including the need to preserve astronomical observation conditions in a state as close to natural as possible, had been of concern to the scientific community for many years. That concern had been expressed by COSPAR and IAU on numerous occasions and had also been voiced in the report of UNISPACE III. The Subcommittee noted with appreciation that, in 2000, the United States Congress had passed legislation prohibiting the Secretary of Transportation, through the Federal Aviation Administration, from issuing or transferring a licence for the commercial launch of a payload containing any material to be used for the purposes of obtrusive space advertising.

139. The Subcommittee noted that obtrusive space advertising was defined by the United States law as advertising in outer space that was capable of being recognized by a human being on the surface of the Earth without the aid of a telescope or other technological device. It also noted that the regulation should not apply to commercial space advertising practices that were already common, such as placing logos on commercial launch vehicles or payloads, because those symbols were not visible with the naked eye to a terrestrial observer once the vehicles or facilities had been placed in orbit.

140. The Subcommittee agreed that the future of astronomy clearly depended on the extent to which it would be possible to limit the degradation of the space environment. Obtrusive space advertising was a grave concern for the future.

141. The view was expressed that States should adopt legislation to limit obtrusive space advertising, so that that activity was regulated by all spacefaring nations and uniform principles were applied to such projects.

142. However, the view was also expressed that there was a question as to the priority nature of such a recommendation.

XI. Mobilization of financial resources to develop capacity in space science and technology applications

143. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee considered a single issue/item for discussion on mobilization of financial resources to develop capacity in space science and technology applications.

144. The Subcommittee had before it the report on the United Nations/International Astronautical Federation Workshop on Making Space Applications Operational: Opportunities and Challenges for Sustainable Development (A/AC.105/775).

145. The Subcommittee heard a technical presentation entitled "Mobilization of financial resources" by the representative of Canada.

146. The representative of Morocco made a statement under this agenda item.

147. The view was expressed that programmes to develop capacity in space science and technology applications did not concern only matters of financing, even if financing constituted a crucial element in the implementation of such programmes. That delegation expressed the view that space techniques were tools that should be integrated into a global approach to the development process. That integration could be achieved within the framework of coordination between donors and institutions potentially interested in space applications, in particular United Nations entities involved in development programmes, through the organization of seminars and expert missions and by inviting development agencies to participate in the work of the Committee.

XII. Draft provisional agenda for the fortieth session of the Scientific and Technical Subcommittee

148. In accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee considered proposals for a draft provisional agenda for its fortieth session, in 2003, to be submitted to the Committee on the Peaceful Uses of Outer Space. Pursuant to paragraph 19 of that resolution, the Subcommittee requested the Working Group of the Whole, established at its 565th meeting, on 27 February 2002, to consider the draft provisional agenda for the fortieth session of the Subcommittee.

149. At its 579th meeting, on 8 March 2002, the Subcommittee endorsed the recommendations of the Working Group of the Whole concerning the draft provisional agenda for the fortieth session of the Subcommittee, as contained in the report of the Working Group of the Whole (see annex II to the present report).

150. Some delegations expressed the view that, in order to ensure an efficient and appropriate use of resources and time, the Subcommittee should consider reorganizing its work in future years. Among other things, the Subcommittee could consider reducing the length of its sessions, limiting the number of meetings for which individual agenda items were kept open, scheduling technical presentations further in advance and at more convenient times, limiting the time spent on symposiums and limiting the time allocated for general statements, as well as the length of individual statements.

151. Other delegations expressed the view that, while it might be appropriate to reorganize the work of the Subcommittee to optimize the use of time, the Subcommittee should exercise caution before reducing the length of its future sessions. In the view of those delegations, a reduction in the length of future sessions might reduce the scientific and technical content of deliberations, leaving inadequate time for consideration of agenda items, including results from the action teams for the implementation of UNISPACE III recommendations, and result in irreversible budget reductions.

152. The Subcommittee agreed that its Chairman should develop alternative possibilities to further improve its work. Those possibilities could be considered by the Committee on the Peaceful Uses of Outer Space at its forty-fifth session, to be held from 5 to 14 June 2002, and should be distributed in advance of that session.

Notes

[1] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna,*

19-30 July 1999 (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[2] See the report of the Expert on Space Applications (A/AC.105/773, paras. 21-30).

[3] United Nations publication, Sales No. E.02.I.6.

[4] United Nations publication, Sales No. E.02.I.7.

[5] United Nations publication, Sales No. E.02.I.9.

[6] *Official Records of the General Assembly, Fifty-sixth Session, Supplement No. 20* and corrigendum (A/56/20 and Corr.1), para. 113.

[7] United Nations, *Treaty Series*, vol. 1037, No. 15511.

[8] *Official Records of the General Assembly, Fifty-sixth Session, Supplement No. 20* and corrigendum (A/56/20 and Corr.1), para. 133.

[9] Ibid., para. 121.

[10] Ibid., para. 126.

Annex I

Documents before the Scientific and Technical Subcommittee at its thirty-ninth session

Symbol	*Agenda item*	*Title or description*
A/AC.105/765 and Corr.1	4	Report on the United Nations/European Space Agency/Committee on Space Research Workshop on Data Analysis and Image-Processing Techniques (Damascus, 25-29 March 2001)
A/AC.105/766	4	Report on the Tenth United Nations/European Space Agency Workshop on Basic Space Science: Exploring the Universe; Sky Surveys, Space Exploration and Space Technologies (Reduit, Mauritius, 25-29 June 2001)
A/AC.105/767	4	Report on the Eleventh United Nations International Training Course on Remote Sensing Education for Educators (Stockholm and Kiruna, Sweden, 2 May-9 June 2001)
A/AC.105/770 and Add.1	7 and 10	Note by the Secretariat on national research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris
A/AC.105/771	4	Report on the United Nations/United States of America Workshop on the Use of Global Navigation Satellite Systems (Kuala Lumpur, 20-24 August 2001)
A/AC.105/772	4	Report on the Second United Nations/International Academy of Astronautics Workshop on Small Satellites at the Service of Developing Countries: the African Perspective (Toulouse, France, 2 October 2001)
A/AC.105/773	4	Report of the Expert on Space Applications
A/AC.105/774	4	Report on the United Nations/Austria/European Space Agency Symposium on Enhancing the Participation of Youth in Space Activities: Implementing the Recommendations of UNISPACE III (Graz, Austria, 17-20 September 2001)
A/AC.105/775	4	Report on the United Nations/International Astronautical Federation Workshop on Making Space Applications Operational: Opportunities and Challenges for Sustainable Development (Albi, France, 27-29 September 2001)

Symbol	*Agenda item*	*Title or description*
A/AC.105/777	12	Background paper by the International Astronomical Union on obtrusive space advertising and astronomical research
A/AC.105/778	3	Note by the Secretariat on international cooperation in the peaceful uses of outer space: activities of Member States
A/AC.105/779	8	Report of the Inter-Agency Meeting on Outer Space Activities on its twenty-second session (Rome, 23-25 January 2002)
A/AC.105/780	8	Report of the Secretary-General on the coordination of outer space activities within the United Nations system: programme of work for 2002 and 2003 and future years
A/AC.105/C.1/L.253 and Corr.1	1	Provisional agenda and annotations
A/AC.105/C.1/L.254	5	Note by the Secretariat on implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III): reports by the action teams
A/AC.105/C.1/L.255 and Corr.1	5	Note by the Secretariat on implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)
A/AC.105/C.1/L.256/ Rev.1	7	A review of international documents and national processes potentially relevant to the peaceful uses of nuclear power sources in outer space
A/AC.105/C.1/L.257 and Corr.1		Proposal submitted by the Chairman of the Committee on the Peaceful Uses of Outer Space on regional space conferences
A/AC.105/C.1/L.258 and Add.1 and 2	15	Draft report
A/AC.105/C.1/NPS/ 2002/L.1	7	Draft report of the Working Group on the Use of Nuclear Power Sources in Outer Space
A/AC.105/C.1/WGW/ 2002/L.1	4, 5 and 14	Draft report of the Working Group of the Whole
Conference room papers		
A/AC.105/C.1/2002/ CRP.1		Information for participants

Symbol	*Agenda item*	*Title or description*
A/AC.105/C.1/2002/CRP.2		Provisional list of participants
A/AC.105/C.1/2002/CRP.3	5	Meetings planned during the thirty-ninth session of the Scientific and Technical Subcommittee by action teams to implement recommendations of UNISPACE III
A/AC.105/C.1/2002/CRP.4	5	List of contacts of action teams to implement recommendations of UNISPACE III
A/AC.105/C.1/2002/CRP.5	8	World Summit on the Information Society: information from the International Telecommunication Union
A/AC.105/C.1/2002/CRP.6		Note by the Secretariat on non-governmental organizations applying for observer status with the Committee on the Peaceful Uses of Outer Space
A/AC.105/C.1/2002/CRP.7	5	Information received from the action team to implement recommendation 32 (Identify new and innovative sources of financing to support the implementation of the recommendations of UNISPACE III)
A/AC.105/C.1/2002/CRP.8	5	Draft progress report received from the action team to implement recommendation 7 (Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts)
A/AC.105/C.1/2002/CRP.9	5	Report received from the action team to implement recommendation 6 (Improve public health services)
A/AC.105/C.1/2002/CRP.10	5	Report received from the action team to implement recommendation 4 (Enhance weather and climate forecasting)
A/AC.105/C.1/2002/CRP.11 and Corr.1	5	Report on World Space Week 2001
A/AC.105/C.1/2002/CRP.12	4, 5 and 14	List of issues to be considered by the Working Group of the Whole
A/AC.105/C.1/2002/CRP.13/Rev.1	5	Information received from the action team to implement recommendation 14 (Improve the international coordination of activities related to near-Earth objects)

Symbol	*Agenda item*	*Title or description*
A/AC.105/C.1/2002/CRP.14	5	Information received from the action team to implement recommendation 1 (Develop a comprehensive, worldwide environmental monitoring strategy)
A/AC.105/C.1/2002/CRP.15	5	Report received from the action team to implement recommendation 18 (Increase awareness among decision makers and the general public of the importance of space activities)
A/AC.105/C.1/2002/CRP.16		Proceedings of the Committee on Space Research/International Astronautical Federation symposium on the theme "Remote sensing for substantive water management in arid and semi-arid areas"
A/AC.105/C.1/2002/CRP.17	5	Report received from the action team to implement recommendation 11 (Promote sustainable development by applying the results of space research)
A/AC.105/C.1/2002/CRP.18	14	Themes of the Committee on Space Research/International Astronautical Federation symposiums organized during the sessions of the Scientific and Technical Subcommittee
A/AC.105/C.1/2002/CRP.19	5	Report received from the action team to implement recommendation 2 (Improve the management of Earth's natural resources)
A/AC.105/C.1/2002/CRP.20	4, 5 and 14	Draft report of the Working Group of the Whole
A/AC.105/C.1/2002/CRP.21	4	Possible statement to be delivered before the World Summit on Sustainable Development
A/AC.105/C.1/2002/CRP.22	5	List of contacts of action teams to implement recommendations of UNISPACE III
Background documents		
ST/SPACE/7		Seminars of the United Nations Programme on Space Applications
ST/SPACE/8		Highlights in Space 2001
ST/SPACE/10		Education, Training, Research and Fellowship Opportunities in Space Science and Technology and Its Applications: a Directory

Annex II

Report of the Working Group of the Whole

1. In accordance with paragraph 19 of General Assembly resolution 56/51 of 10 December 2001, the Scientific and Technical Subcommittee at its thirty-ninth session reconvened the Working Group of the Whole. The Working Group of the Whole held 11 meetings, from 27 February to 8 March 2002. It considered the United Nations Programme on Space Applications, the implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) and the draft provisional agenda for the fortieth session of the Subcommittee, in 2003. At its 11th meeting, on 8 March 2002, the Working Group of the Whole adopted the present report.

2. Muhammad Nasim Shah (Pakistan) was elected Chairman of the Working Group of the Whole at the 565th meeting of the Scientific and Technical Subcommittee, on 27 February 2002. The Chairman, in his opening remarks, reviewed the mandate of the Working Group of the Whole at its session in 2002. The Working Group of the Whole had before it the list of issues that it should consider (A/AC.105/C.1/2002/CRP.12).

A. United Nations Programme on Space Applications

3. The Working Group of the Whole had before it the report of the Expert on Space Applications (A/AC.105/773) and noted that the Expert had supplemented his report by a statement.

4. The Working Group of the Whole noted the United Nations conferences, training courses and workshops, long-term fellowships for in-depth training, as well as technical advisory services, as proposed to the Subcommittee by the Expert on Space Applications (A/AC.105/C.1/L.258, paras. 35-40).

5. The Working Group of the Whole noted that, within the framework of the United Nations Programme on Space Applications, two workshops would be organized on the use of space technology for disaster management, in order to increase the awareness of policy makers of the usefulness of space technology for promoting sustainable development: one to be held in Addis Ababa in June 2002; and the other to be held in Bangkok in November 2002. The Programme was also organizing a workshop in South Africa, to be held shortly before the World Summit on Sustainable Development, which was to be held from 26 August to 4 September 2002. The Working Group of the Whole also noted that the Programme was providing technical advice to the Government of Colombia concerning the organization of the Fourth Space Conference of the Americas, to be held in Cartagena, Colombia, from 14 to 17 May 2002, which would provide regional input for the World Summit.

6. The Working Group of the Whole recognized the opportunity that existed at the World Summit to increase awareness of policy makers of the usefulness of space technology to promote sustainable development. In this regard, the Working Group of the Whole recommended that a statement from the Committee on the Peaceful Uses of Outer Space be delivered at the World Summit to highlight how space applications could contribute to promoting sustainable development. The Working Group of the Whole agreed on the outline of the statement, as well as the format, and the procedure for presenting the statement (see appendix I).

B. Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space

1. Reports by the action teams established by the Committee on the Peaceful Uses of Outer Space at its forty-fourth session

7. The Working Group of the Whole noted that the Committee on the Peaceful Uses of Outer Space, at its forty-fourth session, had before it the results of the survey (A/AC.105/L.234 and A/AC.105/2001/CRP.4 and Add.1) conducted among Member States to identify the level of interest and priority for each recommendation contained in the resolution entitled "The Space Millennium: Vienna Declaration on Space

and Human Development".[a] The Working Group of the Whole also noted that, on the basis of the results of the survey, the Committee had established 11 action teams to implement those recommendations which had been assigned highest priority by Member States and those for which an offer to be leader of the activity had been received.[b] The Working Group of the Whole further noted that the Committee had requested the interim coordinators of the action teams to report on the work conducted and submit work plans to the Scientific and Technical Subcommittee at its thirty-ninth session for its approval.[c]

8. The Working Group of the Whole heard presentations by the action teams on the work conducted as well as work plans. The following information had been submitted by the action teams:

Recommendation[*]	*Interim coordinator(s)*	*Report on behalf of the action team*	*Information submitted*
1 Develop a comprehensive, worldwide environmental monitoring strategy	Islamic Republic of Iran, Philippines and Syrian Arab Republic	Islamic Republic of Iran	A/AC.105/C.1/2002/CRP.14
2 Improve the management of Earth's natural resources	India	India	A/AC.105/C.1/2002/CRP.19
4 Enhance weather and climate forecasting	Portugal	Portugal	A/AC.105/C.1/2002/CRP.10
6 Improve public health services	Canada	Canada	A/AC.105/C.1/2002/CRP.9
7 Implement an integrated, global system to manage natural disaster mitigation, relief and prevention efforts	Canada, China and France	China	A/AC.105/C.1/L.254, annex I, and A/AC.105/C.1/2002/CRP.8
10 Improve universal access to and compatibility of space-based navigation and positioning systems	Italy and United States of America	Italy	A/AC.105/C.1/L.254, annex II
11 Promote sustainable development by applying the results of space research	African States under the leadership of Nigeria	South Africa	A/AC.105/C.1/2002/CRP.17
14 Improve the international coordination of activities related to near-Earth objects	United Kingdom	United Kingdom	A/AC.105/C.1/2002/CRP.13
17 Enhance capacity-building by developing human and budgetary resources	Japan	Japan	A/AC.105/C.1/L.254, annex III
18 Increase awareness among decision makers and the general public of the importance of space activities	United States of America, with the active assistance of Austria	United States of America	A/AC.105/C.1/2002/CRP.15
32 Identify new and innovative sources of financing to support the implementation of the recommendations of UNISPACE III	France	France	A/AC.105/C.1/2002/CRP.7

[*] The recommendations are numbered in the order of their appearance in the Vienna Declaration. The full text of each recommendation is contained in the Vienna Declaration (*Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1).

9. The Working Group of the Whole took note with satisfaction of the work conducted by the action teams and noted that some action teams had made an impressive progress within a short time. The Working Group of the Whole expressed its appreciation to all the interim coordinators, who had exercised leadership in conducting the work associated with the recommendations and coordinated the activities of the action teams.

10. The Working Group of the Whole agreed that the States that had been acting as interim coordinators should assume chairmanship of their respective action teams, in order to move forward from the interim leadership arrangement, except for the action team for recommendation 1, which would be jointly chaired by the Islamic Republic of Iran and the Syrian Arab Republic.

11. The Working Group of the Whole noted that, as requested by the Committee at its forty-fourth session,[d] the Office for Outer Space Affairs had compiled a list of contacts in those States acting as interim coordinators and participating in the action teams. The list had been made available on the web site of the Office (http://www.oosa.unvienna.org/unisp-3/followup/teams_contact_list.html) and was being updated on a regular basis. The list updated as at 22 February 2002 had been made available in a conference room paper (A/AC.105/C.1/2002/CRP.4).

12. The Working Group of the Whole noted that some States that had offered to be members of the action teams had not yet provided their contacts. In order to ensure the exchange of information among all members of the action teams and to facilitate the work of the States that were leading the teams, the Working Group of the Whole encouraged those States that had not done so to provide their contacts for the teams concerned as soon as possible.

13. The Working Group of the Whole recognized that ensuring the transparency of the work of the action teams was of fundamental importance to Member States. In that regard, the Working Group of the Whole recommended that any Member State that wished to receive information from an action team that had not made information available should contact the States responsible for the chairmanship of that team.

14. The Working Group of the Whole agreed that, in order for the Committee and its Scientific and Technical Subcommittee to review the work of the action teams and to approve the proposals emanating from their work, it was important that all action teams continue to fulfil their reporting responsibilities. In order to assist the action teams in reporting on their work to the Committee at its forty-fifth session, in 2002, the Working Group of the Whole agreed to develop a template that the action teams could use for their reports. The template agreed upon by the Working Group of the Whole is contained in appendix II.

2. Establishment of other action teams and involvement of organizations of the United Nations system and other intergovernmental and non-governmental organizations having formal permanent observer status with the Committee

15. The Working Group of the Whole recalled that the Committee at its forty-fourth session had agreed to invite all Member States to identify the recommendations for which specific actions had not been undertaken through the action teams and to consider offering to lead action teams to implement recommendations on a priority basis for reasons of urgency, importance and the availability of resources to undertake the activity.[e] The Working Group of the Whole recalled the agreement of the Committee that the Scientific and Technical Subcommittee, at its thirty-ninth session, should identify any recommendations for which urgent actions were required and should agree on interim coordinators of the teams to be responsible for those recommendations.[f]

16. The Working Group of the Whole noted that, as requested by the Committee at its forty-fourth session, the Office for Outer Space Affairs had conducted a questionnaire survey among the organizations of the United Nations system and the intergovernmental and non-governmental organizations having observer status with the Committee in order to identify the recommendations for which they wished to be members of the action teams. The Working Group of the Whole had before it the results of the survey (A/AC.105/C.1/L.255 and Corr.1).

17. The Working Group of the Whole noted that, at its twenty-second session, held in Rome from 23 to 25 January 2002, the Inter-Agency Meeting on Outer Space Activities had welcomed the establishment by the Committee of action teams to implement

recommendations of UNISPACE III. The Working Group of the Whole also noted the recommendation by the Inter-Agency Meeting that the Scientific and Technical Subcommittee, at its thirty-ninth session, should consider the possibility of having, wherever appropriate, a combination of Member States, organizations of the United Nations system and relevant entities as coordinators for the action teams to be established for some of the recommendations (A/AC.105/779, paras. 36 and 38).

18. The Working Group of the Whole agreed that some of the recommendations could be implemented through action teams that could be led jointly by Member States. The implementation could be carried out by those action teams in cooperation with other interested Member States, organizations of the United Nations system or intergovernmental and non-governmental organizations having observer status with the Committee.

19. The Working Group of the Whole noted that the World Meteorological Organization (WMO) had offered to lead the action team, if established, for recommendation 3 (Develop and implement the Integrated Global Observing Strategy (IGOS)) from the perspective of the United Nations system. In view of the activities already being conducted by the IGOS Partnership that had direct relevance to recommendation 3, the Working Group of the Whole agreed that there was no need to establish an action team. The Working Group of the Whole also agreed that the IGOS Partnership should be invited to make a presentation on its activities at the fortieth session of the Subcommittee.

20. The Working Group of the Whole noted that the International Society for Photogrammetry and Remote Sensing had offered to lead the action team, if established, for recommendation 21 (Provide educational opportunities for youth to learn more about space science and technology) and recommendation 22 (Create, within the framework of the Committee, a consultative mechanism to facilitate the participation of youth in cooperative space activities). The Working Group of the Whole also noted that the Space Generation Advisory Council had offered to lead the action teams, if established, for recommendation 22 and recommendation 23 (Create awards to recognize outstanding contributions in space activity). The Working Group of the Whole further noted that the Space Generation Advisory Council had submitted proposals regarding the work that could be conducted by the action teams for recommendations 22 and 23.

21. The Working Group of the Whole agreed that before establishing an action team for recommendation 21, there should be an offer by a Member State to lead the team. The Working Group of the Whole also agreed that the International Society for Photogrammetry and Remote Sensing could develop a proposal containing objectives, products to be delivered and a work plan of a possible action team for that recommendation and that the proposal could be submitted, through the interested Member State, which would act as the chairman of the action team, to the Committee at its forty-fifth session for review and approval.

22. The Working Group of the Whole noted that Austria had offered to lead an action team for recommendation 22. The Working Group of the Whole agreed that an action team for that recommendation should be established under the chairmanship of Austria and that a proposal containing objectives, products to be delivered and a work plan would be submitted to the Committee at its forty-fifth session for review and approval.

23. The Working Group of the Whole requested the Office for Outer Space Affairs to invite Member States to indicate whether they wished to lead or participate in action teams, if established, for recommendation 23 and any other outstanding recommendations.

24. Some delegations expressed the view that only Member States should lead action teams.

3. Engagement of non-governmental entities in action teams

25. The Working Group of the Whole noted the agreement of the Committee, at its forty-fourth session, that, for each recommendation, the action team should actively consider non-governmental entities that could be invited to participate in the team.[8]

26. The Working Group of the Whole requested the action teams to report to the Committee, at its forty-fifth session, on the measures that they had taken to engage non-governmental entities in the activities of the action teams and on the status of the participation of non-governmental entities.

27. The Working Group of the Whole recommended that a briefing be held, with the participation of the chairmen of the action teams, in conjunction with the forty-fifth session of the Committee, for the benefit of interested non-governmental entities concerning the activities being conducted by the action teams. The Working Group of the Whole invited the States responsible for the chairmanship of the action teams to provide the Office for Outer Space Affairs by mid-April 2002 with a list of non-governmental entities and their contacts that should be invited to the briefing. The Working Group of the Whole also agreed that a similar briefing could be held by the chairmen of the action teams in conjunction with the World Space Congress, to be held in Houston, Texas, United States of America, from 10 to 19 October 2002.

4. Progress report on the implementation of the recommendations of UNISPACE III

28. The Working Group of the Whole noted that, while some of the recommendations of UNISPACE III were being implemented through the establishment of action teams, some other recommendations were being implemented through the consideration of agenda items by the Committee and its subsidiary bodies. In that regard, the Working Group of the Whole recalled that the Committee, at its forty-second session, in 1999, had revised the structure of the agenda of each of its subcommittees, enabling them to introduce new agenda items either under multi-year work plans with clear objectives to be achieved within a fixed time period or as single issues/items for discussions to be considered, in principle, for one session.[h]

29. The Working Group of the Whole noted that the annual report of the Secretary-General on the implementation of the recommendations of UNISPACE III was submitted to the General Assembly each year. The Working Group of the Whole recommended that the Office prepare an updated report on the subject in a tabular form for submission to the Scientific and Technical Subcommittee at its annual sessions.

C. Draft provisional agenda for the fortieth session of the Scientific and Technical Subcommittee, in 2003

30. The Working Group of the Whole noted that, in accordance with General Assembly resolution 56/51, the Scientific and Technical Subcommittee would submit to the Committee its proposal on the draft provisional agenda for the fortieth session of the Subcommittee, to be held in 2003.

31. The Working Group of the Whole noted that, during the thirty-ninth session of the Subcommittee, the following single issues/items for discussion had been proposed by the United States for possible inclusion in the agenda for the fortieth session of the Subcommittee: (a) space solar power; (b) the use of space technology for the medical sciences and public health; and (c) applications for micro-/nano-satellites.

32. The Working Group of the Whole recommended the following draft provisional agenda for the fortieth session of the Scientific and Technical Subcommittee:

1. General exchange of views and introduction to reports submitted on national activities.
2. United Nations Programme on Space Applications.
3. Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III).
4. Matters relating to remote sensing of the Earth by satellite, including applications for developing countries and monitoring of the Earth's environment.
5. Items to be considered under work plans:
   (a) Use of nuclear power sources in outer space;

   (Fourth year of the work plan: The Scientific and Technical Subcommittee determines whether or not to take any additional steps concerning the information in the report of the Working Group on the Use of Nuclear Power Sources in Outer Space.)[i]

(b) Means and mechanisms for strengthening inter-agency cooperation and increasing the use of space applications and services within and among entities of the United Nations system;

(Third year of the work plan: Specific, concrete proposals and, as appropriate, action plans are developed for strengthening inter-agency cooperation in the use of space within the United Nations system and for increasing the use of space applications and services within the system in general and among particular United Nations entities.)

(c) Implementation of an integrated, space-based global natural disaster management system;

(Third year of the work plan: The Scientific and Technical Subcommittee reviews possible global operational structures to handle natural disaster management, making maximum use of existing and planned space systems.)

(d) Space debris.

(Second year of the work plan: The Inter-Agency Space Debris Coordination Committee (IADC) presents to the Subcommittee its proposals on debris mitigation, based on consensus among IADC members; member States review the IADC proposals on debris mitigation and discuss the means of endorsing their utilization.)

6. Single issues/items for discussion:

(a) Examination of the physical nature and technical attributes of the geostationary orbit and its utilization and applications, including, inter alia, in the field of space communications, as well as other questions relating to developments in space communications, taking particular account of the needs and interests of developing countries;

(b) Mobilization of financial resources to develop capacity in space science and technology applications;

(c) The use of space technology for the medical sciences and public health.

7. Draft provisional agenda for the forty-first session of the Scientific and Technical Subcommittee, including identification of subjects to be dealt with as single issues/items for discussion or under multi-year work plans.

8. Report to the Committee on the Peaceful Uses of Outer Space.

33. The Working Group of the Whole agreed that, owing to the limited time available during the fortieth and forty-first sessions of the Subcommittee, in 2003 and 2004, in view of the review by the Subcommittee of the reports of the action teams to implement recommendations of UNISPACE III, the organization of the symposium by the Committee on Space Research (COSPAR) and the International Astronautical Federation (IAF) and the industry symposium should alternate each year, starting in 2003. In the year 2003, the symposium by COSPAR and IAF would be organized and the organization of the industry symposium would be suspended. In the year 2004, the industry symposium would be organized and the organization of the symposium by COSPAR and IAF would be suspended. Thereafter, the normal practice of holding both symposiums during the annual sessions of the Subcommittee would be re-examined. The Working Group of the Whole agreed that, at its fortieth session, in 2003, the Subcommittee should invite representatives of industry to make presentations on a few themes being addressed by the action teams, focusing their presentations on the contributions that industry could make to the work of the individual action teams.

34. The Working Group of the Whole recommended that COSPAR and IAF, in liaison with Member States, be invited to arrange a symposium, with as wide a participation as possible, on applications of satellite navigation and their benefits to developing countries. The Working Group of the Whole agreed that the symposium should be organized during the first week of the fortieth session of the Subcommittee.

D. Other matters

35. The Working Group of the Whole recommended that it be reconvened during the fortieth session of the Scientific and Technical Subcommittee, in 2003.

Notes

[a] *Report of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space, Vienna, 19-30 July 1999* (United Nations publication, Sales No. E.00.I.3), chap. I, resolution 1.

[b] *Official Records of the General Assembly, Fifty-sixth Session, Supplement No. 20* and corrigendum (A/56/20 and Corr.1), paras. 50 and 55.

[c] Ibid., para. 62.

[d] Ibid., para. 57.

[e] Ibid., para. 60.

[f] Ibid., para. 62.

[g] Ibid., para. 60.

[h] Ibid., *Fifty-fourth Session, Supplement No. 20* and corrigendum (A/54/20 and Corr.1), annex I.

[i] A/AC.105/697 and Corr.1, annex III, appendix.

[j] A/AC.105/736, annex II, para. 40.

[k] A/AC.105/736, annex II, para. 41.

[l] A/AC.105/761, para. 130.

Appendix I

Possible statement to be presented to the World Summit on Sustainable Development

I. Highlights of space benefits that could be covered

Overview

1. Space activity helps achieve a sustainable world in which the necessities of life remain generally available and where improving the quality of life inspires continuous striving for sustainability.

2. Space science and technology and their applications strengthen the efforts of humankind to promote sustainable development in various ways.

3. At the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in 1999, the participating States identified various ways in which space applications could enhance the human condition.

4. The resolution entitled "The Space Millennium: Vienna Declaration on Space and Human Development", which was unanimously adopted at UNISPACE III and subsequently endorsed by the General Assembly in its resolution 54/68, spells out a global strategy to turn into reality the potential of space applications to create conditions for sustainable development.

5. The Committee on the Peaceful Uses of Outer Space is taking steps to implement the recommendations of UNISPACE III through action teams consisting of Member States, entities of the United Nations system and intergovernmental and non-governmental organizations that are willing to carry out the work necessary to obtain tangible results in the next few years.

6. Space science and technology can make important contributions to achieving the objectives of the World Summit on Sustainable Development and to meeting the challenges to improving people's lives and conserving natural resources in a world with a growing population that is increasing the demand for food, water, shelter, sanitation, energy, health services and economic security.

Advancing knowledge of the Earth and its environment

7. Satellites can provide the synoptic, continuous and long-term global observation needed to understand the Earth's system more comprehensively, in conjunction with the use of modelling technology, to address issues such as: (a) the influence of the Sun on the Earth's environment; (b) global climate change; and (c) the impact of anthropogenic activities and changes in the ozone layer on the environment and human health.

Protecting the environment and managing natural resources

8. Weather forecasting, climate predictions, disaster management and the management of the Earth's resources are areas where remote sensing is contributing successfully to the improvement of the human condition.

9. Satellites are increasingly providing important information for early warning and management of the impact of disasters, as well as information that is useful in the management of agriculture, forestry, minerals, water resources and fisheries.

Facilitating communications and reducing the information gap

10. Information infrastructure is an essential element of development in any country and space technology is a potent tool for gathering information and for communicating it rapidly and efficiently over wide and remote areas.

11. Newly proposed or enhanced satellite services include mobile telephony, data, imaging, videoconferencing, digital audio, multimedia and global Internet access.

12. Wide-ranging applications include distance learning and telemedicine, providing essential health and medical services and educational opportunities, in particular in rural and remote areas.

13. Satellite communications can provide an essential communications tool in disaster mitigation and relief operations and it is important that more States ratify or adhere to the 1998 Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.

Using position and location capabilities to enhance human security and development

14. Global navigation satellite systems (GNSS) are increasingly becoming part of the infrastructure to support our daily activities, to the extent that they may be considered a utility.

15. The signals from GNSS are being used to enhance the safety and convenience of transportation by land, sea and air.

16. With their extremely high accuracy, global coverage, all-weather capability and usefulness at high velocity, GNSS applications also support and improve a wide range of activities, such as telecommunications, power systems, mapping and surveying, agriculture, crime prevention and law enforcement, as well as emergency response and disaster reduction.

Spin-offs and commercial benefits from space activities

17. Products and services derived from space technology have improved the quality of life all over the world in countless ways.

18. Space research and development promotes and incorporates innovations in many high-technology areas, such as computer software and hardware, advanced electronics and materials, telecommunications and health sciences.

19. Other major beneficiaries from space technology investments and spin-offs include transportation, environmental monitoring, public safety and computer and information technology sectors, including various aspects of sustainable development.

Furthering knowledge and building capacity

20. Concerted efforts are being made by Member States through the Committee on the Peaceful Uses of Outer Space and its subsidiary bodies, as well as the Office for Outer Space Affairs of the Secretariat, to develop human resources with appropriate knowledge and skills, including training project management, in particular in developing countries, to use and benefit from space science and technology.

21. A key element of the efforts to build such capacities in developing countries is the establishment, under the auspices of the United Nations Programme on Space Applications, of the regional centres for space science and technology education and the Network of Space Science and Technology Education and Research Institutions of Central Eastern and South-Eastern Europe.

II. Possible recommendations for the World Summit

22. The delegations to the summit preparatory committees and to the World Summit on Sustainable Development are invited:

(a) To recognize the high importance of space activities for the provision of operational services and information in support of sustainable development;

(b) To bear in mind the progress made in the capability and responsiveness of space activities since the United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, in 1992;

(c) To call upon the space-related organizations, through their member States, intergovernmental and non-governmental organizations and other relevant entities and the private sector to carry out space activities that can support sustainable development;

(d) To recognize that the Committee on the Peaceful Uses of Outer Space is a focal point for coordinating and achieving international cooperation in space activities and that the Committee is an appropriate forum in which to initiate action utilizing space technologies to implement the recommendations of the World Summit for Sustainable Development and follow-up to them;

(e) To call for close dialogue and coordination between decision makers involved in the follow-up of the outcome of the World Summit on Sustainable Development and the Committee on the Peaceful Uses of Outer Space in order to ensure that space activities contribute effectively to the achievement of the goals of the World Summit;

(f) To invite the Committee on the Peaceful Uses of Outer Space to examine the recommendations of the World Summit on Sustainable Development and to identify ways through which space activities can support those recommendations.

III. Schedule and procedure to be followed concerning the presentation of the statement

23. The schedule and procedure concerning the presentation of the statement will be as follows:

(a) At its thirty-ninth session, in 2002, the Scientific and Technical Subcommittee will agree on the outline for the statement to be presented to the Fourth Summit Preparatory Committee;

(b) Member States of the Committee on the Peaceful Uses of Outer Space will be invited to provide additional input by the end of March 2002, in order for the statement to be finalized by the end of April 2002;

(c) The statement will be delivered by [the Chairman of the Scientific and Technical Subcommittee] to the Fourth Summit Preparatory Committee, [and by the minister of a Member State participating in the Preparatory Committee, which will be a ministerial meeting] to be held in Jakarta from 27 May to 7 June 2002;

(d) Member States of the Committee on the Peaceful Uses of Outer Space will be invited to provide any further comments that they may have on the statement delivered at the Fourth Summit Preparatory Committee in order to refine the text to be delivered by the Chairman of the Committee on the Peaceful Uses of Outer Space, on behalf of the Committee, at the World Summit on Sustainable Development;

(e) The Committee on the Peaceful Uses of Outer Space, at its forty-fifth session, in June 2002, will finalize the text of the statement;

(f) The statement will be delivered at the World Summit on Sustainable Development, to be held in Johannesburg, South Africa, from 26 August to 4 September 2002.

Appendix II

Template for a report by an action team

Action team for recommendation No. ___	
State(s) leading the action team	
Members	***States:*** ***Organizations:***
Objectives	
Organizational structure	
Principal products to be delivered	
Work plan (updates)	
Activities that have been carried out since the Scientific and Technical Subcommittee held its thirty-ninth session, in 2002	
Measures that have been taken to encourage the participation of non-governmental entities	

Annex III

Report of the Working Group on the Use of Nuclear Power Sources in Outer Space

1. At its 561st meeting, on 25 February 2002, the Scientific and Technical Subcommittee re-established its Working Group on the Use of Nuclear Power Sources in Outer Space under the chairmanship of Sam A. Harbison (United Kingdom of Great Britain and Northern Ireland).

2. At the 1st meeting of the Working Group, on 25 February 2002, the Chairman recalled the tasks before the Working Group and the work plan approved by the Scientific and Technical Subcommittee at its thirty-fifth session (A/AC.105/697 and Corr.1, annex III, appendix).

3. The Working Group had before it a note by the Secretariat, entitled "National research on space debris, safety of space objects with nuclear power sources on board and problems relating to their collision with space debris" (A/AC.105/770 and Add.1).

4. The Working Group also had before it a draft of its report to be prepared and submitted to the Scientific and Technical Subcommittee in accordance with the work plan (A/AC.105/C.1/L.256 and Corr.1 and Add.1).

5. On the basis of the draft report mentioned in paragraph 4 above and the comments made by delegations during its deliberations, the Working Group finalized and adopted its report to the Scientific and Technical Subcommittee entitled, "A review of international documents and national processes potentially relevant to the peaceful uses of nuclear power sources in outer space" (A/AC.105/C.1/L.256/Rev.1).*

6. At its 11th meeting, on 7 March 2002, the Working Group adopted the present report.

---

* To be issued subsequently as document A/AC.105/781.